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EDITORIAL DEPARTMENT NOTE

Like so many other excellent ideas, forecasting became for many concerns almost a lost art during World War II. It is high time, therefore, for such organizations to revive methods and devices which had proved successful in the handling of cost control problems prior to the war. Stanley Z. Bronner, the author of the first article, contributes some valuable ideas on the subject, particularly as they relate to the analysis of cost variances due to volume by measuring the extent of responsibility of the production and sales departments for such variances. Another interesting device is the use of business indices in measuring the effectiveness of the sales department in meeting its sales quotas.

Mr. Bronner, a member of the Bridgeport Chapter and a former Director and President of the Newark Chapter, is well known to our readers. He began his career with the Monroe Calculating Machine Company in 1926. He left in 1928 to engage in other activities, but in 1931 he returned to the Monroe Calculating Machine Company to take over the supervision of their cost department, later becoming Assistant to the Controller. While in this position he installed a budgetary procedure for the control of production, sales, and inventories. He also developed a method of qualitative market analysis for establishing salesmen's quotas as well as an accounting and clerical work-simplification program. For six months in 1942 he acted as Assistant Comptroller of the Brewster Aeronautical Corporation. Since 1942 he has held the position of Chief Works Accountant of the Bridgeport Brass Co.

Our second article is one in which accountants, as members of their communities, should feel a strong interest. It deals with the application of cost control principles to the problems of budgeting and finance for municipalities. It shows what can be done to further efficiency of governmental operations in the hands of a really competent technician. Often these include departments found in many industrial plants, such as garages, repair shops, pawn plants, etc.

Mr. Sykes, the author of the article, is a member of the board of directors of the Hamilton Roads Chapter. He is a certified public accountant and presently holds the position of Budget Statistician for the city of Norfolk, Va. He is also Secretary and Resident Actuary for the City Employees' Retirement System. He is the author of annual reports in 1939 and 1940 entitled, "Civic Affairs," covering municipal operations with particular attention to accomplishments and costs of local government.

Articles published in the *Bulletin* present many different viewpoints. In publishing them the Association is not sponsoring the view expressed, but is endeavoring to provide for its members material which will be helpful and stimulating. Constructive comments are welcomed and will be published in the Forum Section of the *Bulletin*.

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USE OF SALES AND PRODUCTION FORECASTS IN THE DETERMINATION OF VARIANCES

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THE purpose of this discussion is to review some of the things which we, as industrial accountants, shall be doing again now that we are back in our peacetime businesses. During the war we got away from some of these things, and the time has come for us to reappraise the tools of control and to get them working again. These include forecasting of sales and production, and this presentation is particularly concerned with the use of such forecasts in the determination of variances.

I never heard of a company which did not, or which does not, forecast its business. It is true that few companies make a studied effort to forecast in a formal manner their sales and production programs, but is there a business that almost every day does not have to make some decision concerning what will happen tomorrow or next month or a year from now? Every time a business manager decides on the purchase of a large piece of equipment involving the investment of a considerable sum of money, he must have in mind the prospect for a certain amount of income from the production by that unit, otherwise there would be no point in acquiring it. Every time a business manager decides to expend a given amount of money on an advertising program, he has in mind certain income results out of which that advertising cost must be paid. Every time a business manager makes a decision with respect to his production volume, which may or may not increase his inventories, he has made at least some mental calculation of the volume of the shipments during the period in which the production will take place. We can cite instance after instance of a similar nature where business managers are currently making decisions that affect the future. If made with any degree of intelligence, these decisions must be based upon certain assumptions as to the income level of a future period. I have heard it said, and I believe it, that the success of a business manager depends more upon his skill as a prophet than upon his industry as a producer.

It is, therefore, a wonder to me that more companies have not formalized a plan of forecasting. This point is made by Gordon Pearson in *Credit and Financial Management*, September, 1945:

> Start any place other than from a decision as to what products are to be built, together with a forecast of their sales, and you are headed not too merrily towards a stone wall. Shying away from making these forecasts because of the uncertainty of the future is to shirk the responsibility of management. The more uncertain the future the greater the necessity for a plan; for steering towards a goal, even though an arbitrary one, is more economical than drifting without aim or purpose. While, as we shall see later, there are factors other than the nature and volume of production which must be considered, those two essential elements determine the framework of a company to which all activities must be tied.

Importance of Forecasting

Let us enumerate some of the good, sound reasons why a company should assemble its plans and express them in terms of a sales and production budget:

1. To anticipate financial requirements.
2. To anticipate profit possibilities so that plans can be altered if they appear at first to be unsatisfactory.
3. To level the month-to-month rate of production.
4. To determine inventories.
5. To plan the organization for expansion or contraction of facilities.
6. To determine in advance the change in overhead requirements (both manufacturing and selling).
7. To plan advertising.
8. To plan product developments.
9. To plan sales promotion.
10. To plan sales distribution.
11. To plan price policies.
12. To assist in determining wage and labor relations policies.
13. To promote coordination of the various functions.

This is an impressive list, and because it comprises the major responsibilities of industrial management, it suggests the value of the budget as a yardstick.

Of all the measuring tools used by modern management—including accounting, standard costs, and incentives—budgeting, if properly developed, ranks second to none in assisting management to measure the effectiveness of operating effort. To emphasize the point, compare accounting with budgeting. Accounting has been developed to a high degree of usefulness. However, accounting is essentially *post facto*. The act of planning precedes the fact. Since the technique of planning is budgeting, one might almost wonder why budgeting technique was not developed along with that of accounting.

Variances

The specific usefulness of the sales and production forecasts is that they result in the development of variances. The analysis of variances is a most important part of the work of industrial accounting. Thus the operating statement should present the variances in a summarized form. These variances should represent the major sources of profit and loss. How can a business take the necessary steps to eliminate the sources of loss and to broaden the sources of profit unless the areas in which these occur are currently brought to the attention of the responsible executives? What are these sources of profit and loss variations? Summarized on the operating statement, they are:

1. Sales volume variances.
2. Manufacturing volume variances.
3. Sales price variances.
4. Materials purchased variances.
5. Labor variances.
6. Other controllable cost variances.
7. Yield variances.
8. Administrative and selling expense variances.

Of these only the first two, that is, sales and manufacturing volume variances, are discussed below, although sales price variances are touched upon.

Apportioning Volume Variance

Back in 1925, the President of the company where I was then employed, wrote a letter to the accounting firm which was performing the annual audits. He requested them to draw up a plan whereby a distinction could be made on the operating reports between the losses or gains attributable to selling capacity performances as against manufacturing capacity performances. In other words, what the President of this company was seeking was a means of determining the total production volume variation segregated between the sales department's inability to obtain the necessary sales and the manufacturing department's inability to get out the required production. The reply to that letter was a report which in essence recommended the installation of a budget program, including suggestions for forecasting sales and production. During the 1930's the methods of forecasting were developed to the extent that production volume variance was determinable and could be allocated between the proportion applying to manufacturing performance and the proportion applying to sales performance.

The volume variance considered here relates soley to *cost* variance due to volume, that is, variances, if unfavorable, for which the manufacturing department does not feel it should accept responsibility, at least not the full extent of it. An illustration will make this clear:

	Flexible Budget			
Quantity	*Variable Cost*	*Fixed Cost*	*Total Cost*	*Unit Cost*
100	$350.00	$150.00	$500.00	$5.00
95	332.50	150.00	482.50	5.079
90	315.00	150.00	465.00	5.167
85	297.50	150.00	447.50	5.265
80	280.00	150.00	430.00	5.375

Planned sales budget	100 units
Actual sales	90 "
Planned production	90 "
Actual production	80 "

The variable unit cost is thus $3.50, while the fixed unit cost for 100 units or normal capacity is $1.50. To determine the portion

of volume variance assignable to the manufacturing and sales divisions, it is necessary to measure actual against planned performance and translate this difference into dollar amounts on the basis of fixed overhead absorption. Reference to the above illustration reveals that each division fell short of its planned objective by ten units. Since each unit represents absorption of fixed overhead of $1.50, this results in a total volume variance of $30.00, of which the manufacturing and sales departments are each charged 10 x $1.50 or $15.00.

The above represents, of course, a degree of oversimplification, but it does develop principles. In actual practice with a diversification of products, production is expressed in terms of some standard unit of measurement, and all volume variances are recorded through clearance accounts which are charged at the standard costing rates for the actual production priced at the standard cost rates for the level at which the plant should have operated.

The Forecast of Sales

There are a number of ways of preparing the sales forecast or budget. The selection of the method to be employed depends largely upon the conditions of the business. One might say that it would differ for every business. The canner of tomatoes, who disposes of his product through one of several lines of distributors, would deal with an entirely different set of factors than the producer of office machines with a well-developed sales organization. A canner of tomatoes might be satisfied with a forecast of his sales in total only by type of container, but a company with a wide distribution through its own sales outlets would not only want come forecast of its total dollar volume, but also would want to know the geographical areas from which that total volume would come. This latter involves market analysis, to which reference will be made later.

In any event, there is one thing that most large producers should do. A studied effort should be made to determine the principal influence upon the sales volume of a given product. This factor, whatever it is, should be expressed in terms of an independent index which is currently available. Such an index might be Federal Reserve Board's index of industrial production, gross national product, net national income, total disposable national income, or

a combination of a number of the reliable indices of business activities. The relationship between the sales volume of a given product and the independent index finally selected should be known, and it should be determined by statistical means, preferably through correlation analysis and the related regression equation.

Correlation Analysis

We need not dwell on a discussion of the statistical mathematics involved except to say that correlation analysis is merely a means of determining the relationship that exists between two sets of variables, a dependent variable, such as selling volume of a given product, and an independent variable, such as, gross national product. The relationship is expressed mathematically as a coefficient with a numerical value ranging from minus one to plus one. If every time the independent variable moves up one point, the dependent does likewise, there is perfect positive correlation and the coefficient is plus one. If, on the other hand, every time the independent variable moves up one point, the dependent variable moves down one point, then there is perfect negative correlation, and the coefficient is minus one. Thus, any degree of relationship differing from perfect positive relationship to perfect negative relationship, carries a proportional numerical value between the two extremes.

The relationship, when determined, between the sales volume of a given product and one or more independent indices becomes valuable to us in two ways: first, it helps us determine currently if we are getting a sales volume consistent with the economic climate existing at the moment by determining the sales volume variance; second, it is valuable in forecasting future business.

With respect to forecasting, I have often been asked this question: "What is the sense of applying a known relationship that exists between the sales of a given product and an index of general business to a forecast of general business in order to arrive at the expected sales of a given product?" The inference of the question is, "why not guess at what your own business is going to be in the first place?" I have answered this question in what I consider to be a logical way based on observation and experience. To begin with, it is not necessary to rely upon your own judgment in forecasting the level of general business conditions as meas-

ured by one of the suggested indices. The compilers and publishers of these nationally known indices, usually once a year or more often, make some predictions anticipating their level for a year in advance. On this point one might take exception on the basis that there isn't any one man or any group of men in this world today who can forecast with reliable accuracy what the general economic activities will be a year henceforth, either for the whole country or any part thereof, and I would accept that criticism because essentially I believe it myself. However, I would prefer to give the benefit of the doubt to our skilled economists in the Department of Commerce, or on the Federal Reserve Board, or to our friend, Leonard P. Ayres of the Cleveland Trust Company.

Measuring Effectiveness of Sales Organization

Since it is a fact that some decision must be made with respect to the level of sales operations in a forthcoming period, I lead right to the second point in establishing the reasons for looking into the crystal ball to see what tomorrow holds in the way of potential business volume. When sales of a given product are forecast in relation to an independent index which primarily reflects the level of that product's sales, it is possible to determine with some degree of accuracy the effectiveness of the sales organization which is selling that product. By way of illustration, suppose that a sales forecast were made in what appears to be the most direct manner, that is, the president sits down and, with his experience and "feel" of the business, decides that next year we are going to do five million dollars' worth of business, and we set that amount up in our budget. Now there is no argument with the president; more than likely he will be closer than anyone else. The figure is divided by twelve and the resulting quotient becomes the monthly sales budget. At the end of the first three months we find we have done a million dollars worth of business, which, compared with the sales budget for the quarter, shows that we are $250,000 behind our goal. Now, what is wrong? Are we justified in saying that the sales department has fallen down on its job and didn't get its share of the business, or should we admit that our forecast was too optimistic and, therefore, we ought to pare it down. We may decide that it is the former, or the latter, or a

combination of both factors, but, whatever the decision, it would have to be more or less arbitrary, and thus we open ourselves up to having to accept alibis instead of reasons.

Seasonal Fluctuations

Compare this picture then with a condition where the relationship between general business conditions and the sales of our business is a known factor. Based upon a forecast of 110 per cent for general business conditions and making proper adjustment for long-time growth trend, the sales volume indicated for a given product is five million dollars. To this five million dollars we have applied the previously developed seasonal index which showed that the volume of business which should have been obtained in the first three months out of the five million annual figure amounted to $1,370,000. In this illustration at the end of three months we find that we have actually sold $1,270,000, or $100,000 less than the original budget. But knowing that general business conditions actually averaged 105 per cent for the first three months in terms of the independent index and knowing the relationship that exists between that index and our sales volume, we can quickly determine that our sales should be $1,250,000. Thus we find that the sales performance is actually better than what it otherwise appears to be if we have no gauge of the economic conditions under which the sales took place. The drop in business due to conditions entirely beyond the control of our sales force might well cause us to revise our plans early enough so that our profit requirements need not be impaired unnecessarily. Let me emphasize this matter of the determination of the sales volume variance. Knowing what the sales volume should have been, we have some measure of our total volume variance which is attributed to the sales department's inability to get its share of the business available. In other words, a source of profit loss (or gain) thereby is made known to management.

Sales Outlet Potentials

As previously mentioned, sales forecasting in a company with wide distribution consists of more than anticipating the total volume of sales, because management will want to know the amount that can be expected as the contribution from each sales outlet.

Under these circumstances, it is desirable to develop market potentials for each geographical unit reported in the sales organization. Many companies have developed market analysis so that the market potentials applied to a given total sales volume level indicate the amount and quantity of sales to be expected from each of the sales outlets. In most cases these market potentials were developed before the war, and they are now subject to considerable change as the result of what has happened during the war. Some measure of the change is indicated by the population shift from one area of the country to another. The Bureau of Census has estimated that wartime civilian migrants numbered about 15,300,000 in March, 1945.

Final Sales Quotas

I don't wish to imply that the application of the sales outlet buying potentials to the total volume forecast necessarily results in the budgets or quotas of these sales outlets; rather, I want to emphasize that the figures developed in this manner become a guide to the establishment of the final quotas. Companies with many sales outlets should, and do, require that each make its own estimate, which is checked against that developed by applying the market potentials. A comparison of the two forms the basis for discussion and compromise, at least to the extent that the quota or budget for the sales manager of a given outlet is acceptable to him. This is a most important point in the successful operation of a sales budget program.

Forecast of Production

There was never a time in industrial history when the forecasting of production was a more vital factor in the management of business affairs than at the present moment. Essentially, forecasting production is nothing more than the planning of the uses of manufacturing facilities, the facilities of men, money, and machines. Today, with the pressure for a guaranteed annual wage, higher wage rates, lower unit costs, more production, increased competition, and the greater social obligations of the individual enterprise, planning or forecasting production becomes a scientific duty.

The cornerstone of the production budget is obviously the sales

budget, but the sales budget alone cannot, in most cases, be the only factor that is considered in establishing the production budget. Among the other factors to be considered is the inventory. The determination of the production budget related only to a sales budget without duly considering inventories can result in the tying up of capital to an uneconomical degree. On the other hand, an attempt to reduce inventories for the sole purpose of maintaining high inventory turnover may result in uneconomical manufacturing costs, delay in meeting customers' requirements, seasonal employment and unemployment, uneconomical lot sizes and other undesirable conditions. Too often do we see adherence to the worship of the principle that the more times we can turn over our inventory at a profit, the greater will be the return on the investment, result in inordinate cost. Under some operating conditions it is more profitable to accept in our thinking a lower rate of turnover than that which we might require at a higher level of production. The turnover rate should not necessarily be fixed. Accordingly, the inventories should be budgeted with this in mind, because the level at which we wish to carry inventories will naturally affect the production budget.

If production and inventories budgets are to be used to develop volume variances, they should be revised as often as necessary during the year. That proportion of the total volume variation for which the manufacturing department is held accountable is determined on the *planned* production. The planned production, therefore, must be currently acceptable to both the manufacturing head and the general manager. If the manufacturing department fails to keep pace with planned production, a source of loss is uncovered and is measured by the differences between the unit product cost at *actual* level and the unit product cost at *planned* level times the actual units produced.

Price Variance

Another angle of sales forecasting which I should like to review is the relationship to price. Certain it is that the volume level which is selected to develop unit product cost is a factor which ranks equally in importance with the efficiency of production and sales distribution. We all know that it makes a great difference whether the unit product cost is developed on "X" volume or 50

per cent below or 50 per cent above "X" volume. Here is a good example: a company was early in the development of a new product brought to the market. It had established a pilot manufacturing unit which had been operating for a couple of years. The cost of this newly-developed product, even with two years of refining the production processes, was such that it could be sold only to a very limited market. The limited market, in turn, resulted in the high cost due to the low volume. This company had a choice of doing one of two things. It could continue to operate on its present basis and be satisfied with its present market, or it could summon capital facilities to permit expansion to a volume level which would bring down unit costs to the point where markets could be reached that were known to exist. The latter choice was made, and this company enjoys almost a monopoly and a highly profitable position with a widespread use of its product, which otherwise could not have been afforded and enjoyed by its users. I merely cite this to illustrate the extreme effect of volume upon cost.

When sales and production are forecast, the effect of volume variance is known in advance so that plans can be altered in time to save the company unnecessary losses or to take advantage of profit opportunities which might otherwise escape notice.

In a great many of our industries the volume level selected upon which to establish cost is considered to be the normal volume level. In others, volume level for cost establishment is changed from period to period and cost is reflected on an "expected actual" basis. Obviously, in the latter case, a sales forecast is essential. In the former case, a forecast appears to me to be equally necessary, because we should know in advance about what we can expect in the way of losses or gains due to capacity volume variances. Such a forecast may effect a change in the pricing policy of the company.

The computation of price variance might be accomplished by first determining the *right* price of the product unit, and then multiplying the difference between that price and the actual price times the number of units sold.

The establishment of the *right* price, even though we might not be able to obtain it, is, nevertheless, a most beneficial subject of study in many industries. The price structure of an industry may be out of line productwise, that is, one product of a given line may be priced too high in relation to cost and another product in the

same line may be priced too low, or again, maybe the whole price structure is incompatible with cost because the volume level which makes that cost possible cannot be maintained. Let me repeat, even though we can do nothing about changing the price, these factors and their effects on our profits should be known.

Conclusion

The material presented in this paper was prepared with a full realization that, at the moment, many companies are confronted with abnormal conditions. The pressure of demand, partly due to the accumulated backlog, makes the question not how much we can sell, but how much we can produce. Even with the greatly expanded facilities of these companies, production capacity frequently lags behind sales demand. Under these abnormal circumstances it is easy to be fooled into thinking that a given enterprise has found a new place in the sun, or that it has improved its relative competitive position, or that new permanent customers and markets have been acquired to broaden its field of operations. In other words, we may be led to adopt a new concept of normal, which, unless we are careful, may distort our judgment and cause us to loose sight of the true economics of our business. Sales and production forecasting and the determination of variances can help us keep our eyes on the ball.

COST ACCOUNTING CONTROL FOR MUNICIPAL BUDGETING AND FINANCIAL ADMINISTRATION

By A. Winston Sykes, Budgeting Statistician, City of Norfolk, Va.

CAN cost accounting principles be applied to the same advantage of a municipality or other governmental unit with which this accounting instrumentality is employed to control the business operations of the private enterprise? That question has been raised a number of times to the writer's knowledge. The answer to this query is, of course, in the affirmative, with emphasis on the fact that cost accounting methods *must* be present in the general system of municipal accounting if complete financial control is to be exercised in an intelligent and efficient manner over the affairs of the governmental body.

Financial Planning Control

Financial administration, as it is applicable to the municipality, comprehends planning, budgeting, controlling, accounting, and reporting on the expenditures of the municipality in direct relation to the sources of revenues which provide resources for the operation of the government. The appropriations embodied in the budget set the limit to which funds may be expended for a particular governmental bureau, division, department, activity, or other specific purpose. Through the constant comparison of expenditures with the budget and other appropriations, it may be observed whether the municipal functionary charged with the expenditure of the appropriation is spending within the appropriation. If not, appropriate means must be utilized to deter the expenditure of the funds appropriated. By means of monthly or quarterly allotments, making available for expenditure an aliquot or other selected part of the appropriation, control over expenditures may be tightened so as to constitute a more or less automatic control over the spending of the money appropriated.

Financial planning is usually reduced to an expedient known as a budget, while financial control is achieved primarily by making comparison of expenditures with the budget appropriations and imposing restrictions on the spending policy of administrative officers

when necessary to conserve the unencumbered balance of any appropriations. Reporting may be defined as the means of presenting formal statements, summaries, analyses, comments, and interpretations of the financial facts accumulated by the system of accounting. The fact that citizens are entitled to have intimate knowledge of the financial affairs and condition of their government places public reporting high on the list of important duties and responsibilities of the chief financial officer of a governmental unit. Unfavorable financial reports, unless they can be attributed to conditions wholly without the control of the chief financial officer, place him not only in an embarrassing position, but reflect his incompetence as an administrator of the financial affairs of the municipality.

Fund Accounting

It is the unique form that municipal accounting assumes that gives rise to the false impression that cost accounting principals have limited application in governmental accounting. Generally, governmental accounting is referred to as fund accounting, for the reason that a separate accounting entity, known as a fund, is established for the performance of certain activities and functions of the governmental body. In municipal accounting terminology, a fund is construed to mean a sum of money or other resources earmarked for the accomplishment of certain objectives or activities within the regulations, restrictions, or limitations imposed by the municipal charter or legislative body. Ordinarily, the accounting system of a muunicipality is composed of the following funds: general fund, special revenue funds, working capital funds, bond funds, special assessment funds, sinking funds, utility funds, and trust and agency funds. In addition thereto, account segregations are maintained for the general bonded debt and the general fixed properties of the municipality.

As each fund constitutes a separate accounting or financial entity, a separate set of general ledger accounts is maintained for each fund, from which a trial balance may be made for the preparation of accounting statements expressing the financial condition and operating results of each fund. In addition to accounts for assets, liabilities, reserves, and surplus, which are technically known as proprietary accounts, there will be found, in most funds,

others known as budgetary accounts, which contain entries relative to the anticipated revenues and authorized appropriations.

Objectives of Municipal Cost Accounting

Having presented a digest of the essential characteristics of municipal accounting, let us consider some of the more specific applications of cost accounting for municipal fiscal control. Normally, cost accounting practices will be instituted to accumulate cost data in connection with the following municipal functions or operations:

1. Operation of working capital funds for central garages, print shops, stores facilities, carpentry, and other repair shops.
2. For cost finding in connection with capital improvements, such as the construction of airports, bridges, underpasses, public schools and buildings, streets and highways, sewer lines, and other more or less permanent property.
3. To determine the cost of special assessment projects for the division of their cost between the municipality and the benefiting property owners.
4. To assemble costs incurred in the operation of municipal institutions, such as hospitals, homes for orphans, alms houses, penal institutions, prison farms, and educational institutions.
5. For cost information relevant to the operation of municipal utilities, such as gas and electric plants, waterworks, and bus and transportation systems.
6. To establish unit cost standards for certain public services to measure the efficiency of performance, as well as to aid in the preparation of current budgets for the general and special revenue funds.

Municipal Garage

Working capital funds, sometimes referred to as revolving funds, are designed to render services at cost on a self-supporting basis for the sole benefit of the bureaus and departments of the governmental unit. Quite often working capital funds are found for the operation of asphalt plants, central garages, print shops, storerooms, and repair shops of various kinds. Some of the funda-

mental cost-finding principles used to control the operations of a centralized garage will be reviewed, since this facility is found in nearly all cities and typically illustrates the manner in which working capital funds are financed and operated.

The objective of the municipal garage is to maintain motorized equipment, such as trucks, passenger cars, tractors, graders, bulldozers, cranes, shovels, and other construction equipment in satisfactory working condition at all times for ready and economical use. Upon the establishment of a working capital fund to finance garage operations, an appropriation is customarily made in the general fund covering moneys to be transferred to the garage working capital fund for the initial purchase of equipment and defrayal of operating expenses. The other source of funds for financing the garage is derived from charges for equipment rented to the bureaus, departments, and construction projects. It is the practice of most municipalities to base rentals for trucks and passenger cars on a mileage basis, while construction equipment is most frequently charged on an hourly basis. The rental rate for trucks is estimated by dividing the estimated aggregate operating cost of such vehicles for either a month, quarter, or year by the estimated number of miles trucks are to be driven for the corresponding period of time. The establishment of the rate for passenger cars is computed in an identical manner, while the hourly rate to be charged for construction equipment is ascertained by dividing the estimated cost of operating such equipment for a month, quarter, or year by the estimated number of hours such equipment will be used during the selected period of time. Then it is obvious that to set the predetermined rate to be charged for the rental of garage equipment, some resort must be made to cost accounting.

Offsetting the charges to bureaus, departments, and construction projects for the rental of equipment, credits are made to an account usually styled "Billings for Services Rendered," the principal revenue account of this working capital fund. When equipment is assigned to use, the wages of the chauffeur, truck driver, or equipment operator are added to the hourly or per-mile rental rate if not taken into account when setting the rate. It seems preferable to include wages in the rate to arrive at the total cost per mile or hour to operate equipment. Rental billings, summarized daily and entered on a monthly recapitulation record, are charged to the

bureaus, departments, and construction projects at the end of each month, at which time warrants for collection, or invoices as they are sometimes known, are prepared charging the bureaus, departments, and construction projects for the services rendered by the garage. Such sums received from the bureaus, departments, and construction projects in payment of equipment rentals are applied to replace depreciated equipment. When appropriations are made from the general fund for the acquisition of initial equipment and additional equipment needed thereafter, as distinguished from mere replacements, the rentals paid to the garage working capital fund are usually ample for the replacement of all equipment when it reaches the end of its service life. It is the application of this principal that warrants the use of the term "working capital" or "revolving fund."

All costs of operating the garage finally find their way into one of three main cost classifications, namely, truck costs, passenger car costs, and construction equipment costs. Each of these three principal summary accounts is supported by individual cost records for each piece of equipment in service, showing such information as the cost of fuel and oil consumed, repair costs, tire replacement costs, depreciation, insurance, and such statistical data as the number of miles traveled and hours worked.

In addition to these direct costs are certain indirect expenses, such as salaries of the garage superintendent and foremen, office salaries, light, fuel, water, garage supplies, building insurance and maintenance, small tools, and idle times of mechanics and other workers. The indirect costs are listed monthly on an overhead distribution sheet and prorated to the following principal overhead summary accounts: building maintenance overhead, supervision overhead, dispatching overhead, storage overhead, and repair shop overhead.

The building maintenance overhead is prorated to the latter four principal overhead accounts on the basis of square feet occupied. Next, the supervision overhead is distributed to the last three principal overhead summary accounts mentioned on the basis of supervisory time devoted to storage, dispatching, and repair shop operations. The dispatching has to do with the assignment of equipment needed by the bureaus, departments, and construction projects, and is prorated directly to the final cost summary ac-

counts maintained for truck costs, passenger car costs, and equipment costs on the basis of rentals billed. The storage overhead is applied to the final cost summary accounts for truck costs, passenger car costs, and equipment costs on the basis of space occupied by each class of equipment, while the repair shop overhead finds its way into the truck costs, passenger car costs, and equipment costs as part of the cost of repairs to equipment.

At the end of each month, a statement of operations is prepared, setting forth the billings for equipment rented and the direct and indirect operating costs of the garage. If the predetermined rental rate has been set too high, an excess of billings over operating expenses will be in evidence, and, conversely, if the predetermined rental rate has been established at too low a figure, operating costs will exceed the aggregate billings for equipment rented. The ideal attainment is to have the billings exactly offset the garage operating costs, a situation which rarely occurs in practice. If during the first several months of a fiscal year it is apparent that the rental rate is either too high or too low, the rate should be adjusted, but only after investigation discloses why the rate is unsatisfactory. At the close of the fiscal year, the rentals will either exceed the operating costs, or vice versa. This difference should be disposed of by a supplemental distribution rate either charging or crediting the bureaus, departments, or construction projects on the ratio the rental charges each bureau, department, or construction project bore to the total rentals billed during the year. This method has the sanction of conservative municipal accountants, since there is no reasonable argument other than that of accounting simplification to support the contention that the over- or underabsorbed garage expenses be handled as either a deferred charge or credit to be applied to operations of the garage in the ensuing fiscal year.

Periodic review should be made of the individual equipment cost records to observe which equipment is costing too much to operate, which is a signal that either the life of the equipment is approaching the end of its cycle of utility and should be retired from service, or that the increased cost is attributed to faulty or careless operation of the vehicle.

Best accounting practice dictates that depreciation accounting be employed in arriving at equipment operating costs, otherwise

such costs will lose much of their significance because of the absence of the depreciation element. Again, if depreciation is not contained in the costs used for setting rental rates, no provision is made for the renewal of automotive equipment at the end of its service life, thereby making it necessary for funds to be appropriated in the general fund for this purpose. This situation would defeat the basic purpose of the garage working capital fund by making ineffective the self-supporting characteristic of the fund. Either the straight-line or the service-output method, the latter being based on miles traveled or hours worked, as acceptable for depreciating motorized equipment.

Municipal Print Shops

It is a popular practice for municipalities to operate their own print shops to supply stationery and other printing requirements needed for the administration of the government. Usually, an appropriation is made in the general fund, payable to the print shop working capital fund, to be used for the purchase of printing presses, cutters, perforators, bindery machines, and other shop equipment. In addition thereto, funds are also made available by the general fund for the payment of operating expenses of the print shop. The system of cost accounting maintained for the control of print shop operations has as its primary objective the ascertainment of the cost of each printing job undertaken, such cost being billed to the bureau or department for which the job is performed.

Upon receipt of a requisition from a bureau or department head for printing work, the chief printer estimates the cost of the job, placing that amount on the requisition which is then forwarded to the city auditor to determine whether the appropriation of the requesting bureau or department is ample to bear the cost of the job. If adequate funds are available, an entry is made in the general accocunting office encumbering the appropriation for the estimated cost of the job by charging the appropriation encumbrances account and crediting the reserve for encumbrances account of the bureau or department submitting the requisition.

The chief printer, upon notification that the requisition has been approved, makes provision on his production schedule for undertaking the job. Immediately, a job order cost sheet is set up in the

name of the requesting bureau or department, on which are entered the next job order number, description of work, quantity, desired delivery date, and other information. The job cost sheet suitable for this purpose is one having an arrangement of columns for recording materials used, labor employed, and overhead applied to the job. Also, a column must be provided to summarize the cost elements upon the completion of the work. When paper stock is issued from the stockroom, it should be released only through the use of a material requisition signed by the chief printer or another authorized person, showing the job number for which the stock will be used, quantity, and kind of stock. A copy of the material requisition is routed to the cost accountant, who records the quantity, kind, and cost of the stock on the job order sheet for which the issue was made. Ink, unless it is a special kind for a job, may just as well be handled as an indirect expense item.

Recordings are also made on the job cost sheets from daily labor or work reports of print shop employees, indicating the date of the work, workman's identification number, code for type of work performed, and wages earned by the employee. Upon the completion of each job, a summary is compiled of the three cost elements on the job cost sheet, showing the total cost of materials used and the cost of labor, to which overhead is added at a certain amount for each direct labor hour employed on the job.

In larger municipal print shops, departmental cost acccounting is employed, whereby costs are accumulated for such departments and cost centers as machine composition, hand composition, cylinder presses, job presses, hand bindery, machine bindery, etc. Where this method is employed, entries on the job cost sheets for labor and machine time merely show the date, code for type of work performed, and the number of hours devoted to the job. Upon completion of the job, the number of hours worked in each department or cost center is multiplied by its respective predetermined rate which includes not only the cost of labor but machine costs and overhead as well.

Completed work is recorded in the completed jobs register, whereby the cost of material, labor, and overhead is removed from the work in process account and charged to the bureau or department for which the printing work was performed. At this point, a warrant for collection or invoice is prepared and forwarded to

the bureau or department for payment. Upon receipt of the warrant for collection, the bureau or department head prepares a voucher, forwarding same to the city auditor, whereupon the auditor reverses the entry covering the estimated cost of the job recorded in the appropriatiton encumbrances and reserve for encumbrances accounts of the bureau or department for which the work was done. The appropriation account of the bureau or department is then charged, and a credit made to the liability account, "Due to Print Shop Working Capital Fund." When this is paid, the investment in the completed printing job finds its way back to the print shop working capital fund.

Owing to the fact that appropriations are made for bureaus, departments, and construction projects in other funds to cover the cost of services rendered by working capital funds, neither an operating budget nor an appropriation is made for such funds.

Cost Accounting for Capital Improvements

Public works projects are most frequently financed through bond issues, although some few municipalities are now financing such projects for current revenues on what is known as the "pay-as-you-go" basis, to avoid large future payments of interest on borrowed money. Where the former method of financing is employed for construction of such projects as street improvements, sewer lines, bridges, overpasses, schools, and other public buildings, the city council must appropriate funds from a bond fund, authorizing at the same time the issuance of bonds to finance the project. The amount of the appropriation is usually based upon estimates furnished by architects or engineers or represents the amount of the accepted bid of the lowest-bidding contractor if the work is to be let to an independent contractor. In setting the term of bonds issued for capital improvements, the life of the bonds should be no longer than the estimated physical life of the property to be constructed from the bond proceeds, otherwise the municipality may be confronted with the unfortunate obligation of paying off bonds years after the improvement has ceased to exist.

Costs for street construction and improvements are ordinarily broken down into such operations as earth excavation, grading and filling, foundations or roadbed, and surfacing or surface treatment. Cost keeping for building construction is usually kept to

reveal costs of excavation, foundation, masonry, carpentry and trim, plumbing and heating, glazing, and other work. This is necessary if unit costs are to be established for each construction operation mentioned. These data are informative for estimating the cost of future construction. Where part of the construction is let to outside contractors, the job cost sheets will also show the billings for work performed by such contractors.

Material costs are recorded on the job cost sheets from copies of vouchers prepared for payment of materials received from supply houses and from reports for material issued from the city's material yards and storehouses. The value of unused material returned either to building material companies or to the city's storehouses and yards is credited to the material cost of the project from which such material is returned. Labor costs are entered on the job cost sheets from either daily or weekly work reports, prepared and submitted by foremen, showing the type and quantity of work performed and the labor cost. Billings from the garage working capital fund for the use of city-owned construction equipment and trucks and vouchers prepared for payment of equipment rented from outside equipment companies provide data for recording equipment costs on the job cost sheets.

Construction overhead consists of salaries of principal engineers, their office and transportation expenses, the cost of the estimating and drafting divisions, and some other indirect costs which are prorated by some acceptable method, usually on the basis of time devoted to the several projects under constructon.

Upon completion of a construction project, a summary is made of the materials, labor, equipment costs, and construction overhead for each operation. By totaling the cost of all construction operations the aggregate cost of the project is found. If the project has been completed for a municipal utility, this cost is recorded as an asset on the books of that utility. Where a structure is built for a working capital fund, its cost is carried as an asset of that fund, but where the capital improvement is for the general operation of the government, being constructed at the entire cost of the governmental unit, its cost is recorded in the general fixed property accounts and carried at that amount until it is either retired, destroyed, sold, or otherwise disposed of by the governmental body.

It is manifest that correct cost determination is essential to establish the figure at which the capital improvement is to be carried on the books of the municipality. Job cost sheets of all completed jobs should be filed according to project types for reference by engineers engaged in estimating costs of new projects.

The progressive municipality will ordinarily schedule its proposed public works projects over a five or ten-year period, in such order as they are expected to be constructed. The determinants as to the order in which proposed projects appear in the capital budget are: the imperativeness or immediate need for the project and the financial ability of the municipality to undertake its construction. Close coordination must be maintained at all times between the funded debt administration of the municipality and the public works program or capital budget.

Cost Accounting for Special Assessment Projects

Cost finding for projects financed through special assessment funds introduces no new accounting propositions for the cost accountant. As a matter of fact, the same type of job cost sheet used for costing projects of bond funds may be employed with equal flexibility for costing special assessment projects. The method of cost accounting is identical except for the disposition of the cost of the completed construction.

The cardinal distinction between bond fund and special assessment projects lies in the fact that the cost of projects of the former is defrayed entirely by the governmental unit, being projects beneficial to the public as a whole, while the cost of special assessment fund projects is divided in some manner between the governmental unit and the property owners directly benefiting from the special project.

When the cost of a special assessment project has been ascertained, that part of the cost to be borne by the city is set up in the general fixed property accounts, and the part assessed to the benefiting property owners is charged to assessments receivable, an asset account. Each property owner so charged may pay his share of the assessment either by means of a lump-sum payment or on the installment basis. For the reason that the assessed property owner may not be in full agreement as to the necessity for the project, and may raise some objection to bearing part of its cost,

he may exercise his right to inspect the cost records of the project. This is one important reason why accurate costs must be kept for special assessment projects.

Cost Accounting for Municipal Institutions

In most cities there will be found one or more institutions, such as general and contagious disease hospitals, tuberculosis sanatoriums, alms houses, orphanages, prison farms and penal institutions, and colleges and universities. Space will not permit an explanation of the cost practices applicable to the expenditure control for each of these institutions, but some remarks will be made about the system of cost finding employed for a hospital admitting patients with general illnesses.

Municipal hospitals are operated primarily to care for and treat the indigent sick. Patients are required to pay for their hospitalization when found financially able to do so. For the reason that municipal hospitals are usually nonrevenue-producing institutions, operating costs will normally exceed its revenues. The cost system for a municipal hospital is, in most instances, built around the scheme of departmentalization, whereby costs, both direct and indirect, find their way into such primary cost summary accounts as laboratory, pharmacy, surgery and anasthesia, physiotherapy, X-ray, and general administration. In addition to these departmental cost summary accounts, there will be found others for service departments such as dietary, bakery, storehouse, ambulance, laundry, and building maintenance. Using appropriate bases, these indirect costs are prorated to the departmental cost summary accounts. Monthly reports on operations are prepared for each department from which a combined statement of operations is compiled, showing the cost per patient-day for each element of cost composing the total per patient-day cost.

Often the official responsible for the administration of a municipal institution becomes so imbued with the thought of expanding and improving services that he loses sight of the mounting cost to maintain his institution. It is this tendency of administrators that creates the need for close surveillance over operating costs of institutions and is a paramount reason why reliable cost accounting should be applied to control institutional expenditures.

Cost Accounting for Municipal Utilities

The inability of municipalities to attract privately-owned public utilities to serve their communities influenced many of our cities to operate such utilities as waterworks, gas and electric plants, sewage treatment and disposal facilities, and bus and transportation systems. More cities operate water supply systems than all other types of municipal utilities combined, mainly because of the close association the water supply has to the public health and fire protection functions of the local government. A treatise of book's length can be written about a utility's accounting system. For the reason that space will not permit, only a digest of the fundamental cost practices and procedures of the accounting plan for a waterworks will be presented.

Cost finding for a municipal water supply is ordinarily divided into two major divisions, namely, operational cost accounting, and construction and maintenance cost accounting. The former is concerned with the determination of the cost to supply water to consumers, while the latter embraces the ascertainment of costs applicable to new construction, such as mains and distribution facilities; maintenance costs, such as repairs to mains, plant, and distribution system; and service connection costs incurred to tap pipe lines to supply water to consumers.

Construction and maintenance costs are compiled on a job cost basis, whereby the cost elements for material, labor, equipment, and overhead are accumulated, much in the same manner as for capital improvement projects already mentioned, to arrive at the total cost of the construction work. If the project represents new construction, the total cost of such construction is capitalized as an asset of the utility. Where the project takes the form of a betterment to existing plant and property, that part of the cost considered as a betterment is charged to a fixed asset account, and the remainder is absorbed in operations as a repair cost. Maintenance or repair work is a revenue charge and therefore should be charged against operations. Service connection costs are considered as a cost of distribution.

As previously mentioned, operational costs are those incurred to furnish water to consumers, or, in other words, the functional costs of operating the waterworks. These costs are usually compiled on a departmental or functional basis, analyzed as to water-

sheds and reservoirs, purification, power and pumping, distribution, consumers' accounting for billing and collection, and general administration. A detailed statement of the operating expenses for each department or function is prepared monthly, showing the expenses for personal services, materials, supplies, repairs, general operation, and fixed charges. A combined statement of operating expenses is also constructed each month, from which certain details are used to compile the general statement of revenues and expenses on the operations of the utility.

General administrative costs may be distributed to the other five departments or functions, after which unit costs are ascertained for those departments or functions as follows: watersheds and reservoirs, cost per million gallons of water pumped; purification, cost per million gallons of water purified; power and pumping, cost per million gallons of water pumped; distribution, cost per million gallons of water pumped; and consumers' accounting, billing, and collection, cost per consumer account.

The cost per million gallons of water billed is also ascertained by dividing the total operating cost of the utility by the number of million gallons of water billed to consumers. This unit cost figure, when considered in relation to other factors, plays an important role in setting and verifying the adequacy of the rate schedule. Where there is considerable fluctuation in either the utility's total operating cost and/or water consumption from year to year, rates may have to be revised quite frequently. Before the rate structure can be established, however, it must be determined either by the city council or the local public service commission whether water shall be furnished consumers strictly on a cost basis or whether the utility will be operated as a revenue-producing enterprise to allow a fair return on the investment in the utility, such profits ultimately being transferred to the general fund for general governmental purposes. The recent need for more revenues by our municipalities has influenced many of them to follow the latter concept.

Since utilities are operated very similarly to working capital funds, in that each is supposed to be a self-sustaining entity, depreciation accounting should be pursued when determining utility costs. Furthermore, it is considered better practice to impound that part of the revenues representing recovery of expired capital

outlay in a fund for the replacement of retired plant and property. Such a fund is carried as one of the assets of the water utility fund.

Cycle billing is employed by most utilities to equalize the work of reading meters and billing consumers for services rendered. Under this billing procedure, the area of the municipality is divided into several sections, the meters of each section being read and bills prepared therefor at different times during the month where monthly billing is in effect, and different months of the year where quarterly billing is employed.

Unit Cost Standards for Control and Budget Making

Most municipal services are provided by the general fund, probably the most important of all municipal funds because of the numerous public services it finances. The general fund is universally segregated into functions known as departments, bearing such titles as public works, public welfare, public health, public safety, finance, law, education, and some others. Each department is divided into smaller functional entities known as bureaus or divisions, which are created to administer some definite public service or phase of the government. For instance, the organization of the Department of Public Works may include such bureaus or divisions as engineering and drafting, estimating, street cleaning, refuse collection, incineration, building inspection, city plannng, surveys, and some others.

The municipal finance officer must at all times be informed as to what it is costing to render each public service. To control these costs properly, unit costs should be established by dividing the total cost of each public service by an appropriate work unit or other measure of service rendered. Unit costs so compiled for current operations then should be compared with unit cost standards, or basic standards should be set to represent the ideal cost of performing each public service.

Unit costs may be compiled to cover the sundry operations of each bureau or division on a form providing such columnar headings as type of work or operation, work unit, total cost, work units performed, and unit cost; and such statistical information as man-hours, cost per man-hour, equipment-hours, and cost per equipment-hour. Using the Division of Street Cleaning as an

illustration, unit costs may be ascertained for the following operations: hand sweeping, machine sweeping, flushing and sprinkling, removal of sweepings, and snow removal. The work unit for the first three operations mentioned may be based on the cleaning-mile, while cubic yards or tons may be employed as the work unit for finding unit costs for the removal of snow and sweepings. A further refinement may be accomplished by analyzing unit costs into four principal expenditure categories, namely, personal services; materials, supplies, and repairs; general operation and fixed charges; and equipment costs. Where current unit costs are computed in this manner and unit cost standards are maintained similarly, it at once becomes apparent when comparisons are made which expenditures have caused the current unit costs to be at variance with the unit cost standards.

Another use of unit costs, and certainly a most important application, is where they are employed to determine the adequacy of budget-appropriation requests submitted by bureau and division heads preliminary to the preparation of the annual budget for the general fund. The budget estimates or appropriation requests for each bureau and division should be supported by what is known as a work program for the new fiscal year, showing the estimated number of work units to be performed and the unit costs therefor. Comparison of the unit costs appearing on the work program with the unit cost or ideal standards may disclose wide variations, which should be analyzed to show the reason for each variance. Where unit cost analysis is not utilized in the preparation of budgets, the budget appropriations are not scientifically established, and in a great many instances deficiency appropriations are thereby made necessary to cover expenditures.

Other advantages resulting from the employment of unit cost standards are:

1. Bureau and division heads are made cost conscious and, therefore, will be more inclined to associate costs with the performance and improvement of public services.
2. The use and analyses of variances will disclose inefficiencies in municipal management, making it possible to concentrate on the improvement of those services.
3. Budgets, through the use of unit cost standards, may be

prepared scientifically, thereby removing guess work so often followed to establish annual budget appropriations.

Conclusion

While it is gratifying to learn of the considerable progress that has been made in the improvement of the general and cost accounting systems of our cities and towns, there is still much opportunity for betterment. Too often in years past, political groups, through their influence, have placed individuals of limited ability in positions requiring training and experience in municipal accounting and finance, with the result that the financial health of the governmental unit suffered. It was the economic depression of the thirties that exposed the fact that many so-called governmental accounting systems consisted of nothing more than mere records of cash receipts and disbursements. Because of the fear of having to endure another serious depression with an untrained financial officer at the helm of the pivotal function of the government, political groups have exercised greater care in selecting the chief finance officer. Much credit for the improvement in governmental accounting is due the Municipal Finance Officers' Association and the National Committee on Municipal Accounting, who have disseminated invaluable literature on accepted methods of general and cost accounting for municipalities and other governmental units.

An endeavor has been made to present in a somewhat explicit, but in no wise an exhaustive, manner how cost accounting principles and procedures can be applied for the managerial control of the fiscal affairs of a municipal government. It is believed that the array of data presented shows conclusively that cost accounting technique can be applied for the financial control of a municipal government with as much flexibility as this accounting expedient is employable for the financial management of a private enterprise, and must be so utilized for the intelligent preparation of sound municipal budgets and for the general financial administration of the governmental unit.

1946 COST CONFERENCE

Plans are going ahead full-steam for the Twenty-Seventh International Cost Conference to be held at the Waldorf-Astoria Hotel in New York City, June 17-19, 1946. There is every indication that this will be the biggest and most successful conference in N. A. C. A. history.

Each activity and feature of the Conference is being organized by a committee of N. A. C. A. members from the chapters in the metropolitan area, namely, Brooklyn, Greenwich, Newark, and New York. Committees already at work are:

Committee	*Chairman*
ANNUAL DINNER	Charles J. Eggeman, New York
CONFERENCE HALL	Jasper J. Jenkins, Greenwich
DAILY NEWS	T. R. Elsman, Newark
HOSPITALITY	George Kettenhorn, Brooklyn
LADIES'	Mrs. Frederick L. Burns and Frederick L. Burns, New York
PRESIDENT'S RECEPTION	Carl E. Lindquist, New York
REGISTRATION	M. R. Odermatt, New York
SIGNS	Cecil D. Marshall, New York
SUNDAY RECEPTION	George A. Ingalls, Brooklyn Edward V. Carey, Greenwich Nicholas St. Peter, Newark Robert R. Hertzler, New York

Acting as a liasion and coordinating subcommittee between the four chapters concerned and the Conference Committee are the following members of the latter committee: Marshall Granger, New York, *Chairman;* Ernest A. Davis, Greenwich; George E. Hallett, Newark; and Milton Hudders, Brooklyn.

Principal events already scheduled for the Conference include a wide variety of sessions devoted to technical discussions and events for promoting good fellowship. The program as tentatively planned includes the following:

Sunday, June 16	
Afternoon Reception	3:00—6:00 p.m.
Monday, June 17	
Technical Session No. 1	9:00 a.m.
Technical Session No. 2	2:00 p.m.
President's Reception	9:00 p.m.
Tuesday, June 18	
Technical Session No. 3	9:00 a.m.
Chapter Secretaries' Luncheon	12:30 p.m.

Business Session and Luncheon of National Board of Directors	12:30 p.m.
Technical Session No. 4	2:30 p.m.
Annual Dinner	6:30 p.m.

Wednesday, June 19

Technical Session No. 5	9:00 a.m.
Chapter Officers' Conference and Luncheon	12:30 p.m.

For those who desire to make plant visits, play golf, or undertake sightseeing trips, arrangements will be made so as to meet the desires of groups and individuals. Information about such desires will be sought through declarations of intentions to be distributed to members at an early date.

OUR OPEN FORUM

Standards for Job Order Costs

Editor, N. A. C. A. Bulletin:

Mr. Keller's article in the September 1, 1945, *Bulletin* on "The Application of Standards to a Job Order Cost System" is an excellent case study showing how standards commonly used in process manufacturing can be used on job orders to the same advantage.

I think attention should be drawn to the point that variances are allocated to products at the end of the month which, together with the standard cost, provides actual cost of products or product groups. To me, this is important because if standards are properly engineered for cost control purposes, that is, for *what should be done* and *not what is being done*, sizable variances may occur, particularly during periods of labor scarcity when considerable overtime is being worked or a relatively large proportion of the personnel is inexperienced.

Generally speaking, standards should be revised only when changes in material prices, wage scales, product specifications, or methods occur, in order that the yardstick for measuring performance will be relatively stable. For these reasons, a profit and loss statement by products wherein only the standard cost of sales is used and variances are shown on an over-all basis does not provide sufficient information for management to make decisions regarding the discontinuance of unprofitable products or to determine selective sales policies. As to the accuracy of product costs obtained by association of variances with standard product cost, it is my opinion that more nearly correct and scientific "actuals" are obtained than under an actual cost system, which generally has many arbitrary distributions.

Under the system outlined by Mr. Keller, daily checks on efficiency are made by the foreman and job cost supervisor while a job is in process.

This is desirable, as it provides knowledge of poor performance on which immediate action can be taken as well as increasing accounting accuracy. However, in view of the possible large volume of daily labor slips covering work performed in a shop, I suggest there is another medium that is worthy of consideration in a system of cost control, this being a summarized daily cost control report.

The summarized daily cost control report would show performance on completed operations by machine groups or some logical subdivision of the foreman's responsibility. It is indicated in Mr. Keller's article that many orders are in process at one time, which makes it difficult for the foreman through scrutiny of individual labor slips to obtain a full perspective of the performance of his responsibility. Summarized information would enable him to appraise the accumulated effect of poor and good performance on all orders. Such a daily cost control showing budgets, actuals, and variances today and to date would provide an over-all picture of a day's work as well as trend information.

The form of presentation recommended for this control is a sheet providing for 31 days instead of a separate report for each day. The advantage of the 31-day sheet is a trend picture of performance readily available for review any day within the month. For some items desired on a daily cost control, it is not practical, due to clerical volume of work, to convert performance into dollars daily. Where this is the case, presentation of quantitative information regarding budgets, actuals, and variances will accomplish the same purpose. Performance results furnished the foremen on daily cost controls should be summarized with less detail for the factory superintendent. This places the superintendent in a position where he can take action before the fact has become ancient history. Another point in favor of summarized daily cost controls is the elimination of month-end surprises from which almost all operators are embarrassed at times.

J. W. Booker,
Birmingham Chapter.

Installing an Incentive Wage Plan

Editor, N. A. C. A. Bulletin:

The *Bulletin* of January 1 contains a description of "Installing an Incentive Wage Plan", by Charles M. Reinherr and Paul Griek, which reflects considerable serious thinking as to the effects of a wage incentive plan. It is very timely in this period of research to develop means that will result in better labor relations and sustained increased production. While the plan discussed appears to have produced very satisfactory results in this installation, similar plans have not been generally accepted as producing the best results. The plan selected appears to have been patterned after the Halsey 50-50 low-task plan based on total plant production, with indirect workers, approximating 50 per cent of total plant workers, participating equally with direct workers.

The authors suggest that this incentive wage plan has definite advantages over piecework plans in that it offers an inducement to working employees both direct and indirect to work as a team. This in spite of the fact that indirect workers, without any measurement of their own contribution to production, were permitted to participate 100 per cent in increased wages paid for the performance attained by the direct workers. Under normal conditions such an allowance would serve as a definite incentive to increase the number of indirect workers as has been demonstrated in many such installations in the past.

The authors further suggest that inasmuch as the plan places emphasis on the over-all picture, there is less tendency for employees to argue and take issue on individual rates. This no doubt is true since the plan incorporates a very low degree of incentive pull and under the best conditions may be expected to attain no more than 75 per cent to 80 per cent of the productivity consistently attained by more direct forms of incentive. The usual tendency under such group plans, especially those covering a large number of employees, is that they result in continual controversy over the distribution of work load to the individual employees. It is suggested that this tendency can best be avoided by taking time to explain the plan to the employees at the start and then by making special efforts to weed out individuals not adding a fair contribution to the total product. The standards, however, are patently inadequate to determine what would constitute a fair contribution by the individual, so that such facts must depend upon the opinion of supervision and the possibility that employees themselves might insist upon replacement of unproductive individuals. Unfortunately, the consensus of experience over 40 years in the operation of such plans is that production tends to be maintained at the production level of the least productive employee. Under normal collective bargaining procedures, extreme difficulty is likely to be encountered in the replacement of individuals on such unsubstantial grounds.

Generally, this plan impresses me as being one which adequately meets the requirements for the conditions encountered in this installation. However, I question whether due to its broad coverage it would have extensive application in industry.

J. B. Copper,
Birmingham Chapter.

Internal Auditing

Editor, N. A. C. A. Bulletin:

D. M. Sheehan's excellent article, "The Place of Internal Auditing," was timely and interesting. In the commentary it seems to be emphasized that the internal auditing staff should report to the controller. Some other authors have also publicized this view. The writer does not agree that this is invariably the best corporate policy.

In most situations, such a line of responsibility would vitiate the effectiveness of the auditing function. The controller is an operating executive

who does not participate in forming his company's policies but is responsible for their execution as they influence accounting. The auditing staff is charged in part with the duty of determining whether company policies are being followed. Is it not obvious that in such situations sound principles of organization are being violated? Should not the audit staff report its finding directly to the Board of Directors, the Executive Committee, another similar policy-making body, or an officer superior to the controller? This would act as a check upon the operations of the controller's department as well as those of other operating departments.

There are apparent exceptions to this principle which are really extensions of this rule. In the case of multiunit companies or those having widely scattered operating units each with its own separate accounting office, the general controller is sufficiently divorced from the subsidiary accounting functions so as to be in effect a policy-making official as far as accounting in the divisions, plants, or branches is concerned. Under such conditions the chief of the audit staff should report to the controller. This does not impair but rather strengthens the effective check. However, if the controller is intimately associated with the plant or divisional accounting, then he is an interested party and the audit staff should not report to him.

Another aspect of the problem is that the chief of the internal audit staff must be equivalent in ability to the controller in order to carry out the duties of that position. A subordinate position will not attract a man of as high caliber as would the top position.

Internal control as defined by Mr. Sheehan excludes internal auditing. This seems to be a departure from the commonly accepted definition which states that internal control has two phases: (1) internal check and (2) internal auditing. Control does not result from internal check alone. There must be an investigation to determine that the internal check is operating as contemplated and to uncover weaknesses. That is a part of auditing no matter who does it. Without it there would be no control. Internal auditing also otherwise supplements the automatic check rendered by certain accounting and other procedures and methods. In the article internal control (meaning internal check as indicated above) is defined as "the establishment of methods and procedures. . . ." Does not the term also contemplate the operation of the methods and procedures themselves as well as their establishment?

The writer believes that the preparation of an audit program was not emphasized sufficiently. The preparation of this plan together with the necessary review of previous examinations' audit reports, work papers, accounting manuals, standard practice instructions, etc., is important to a satisfactory audit. Furthermore, when the examination is complete, the auditor can be certain that all matters have been covered if the person finishing each operation so indicates on the program. An audit program if properly prepared can be used to avoid permitting the auditing work to become purely routine.

The thoughts advanced herein are not set forth to detract from Mr. Sheehan's paper. It represents a formidable undertaking, ably executed.

GEORGE A. BRICAULT,
New York Chapter.

TAX STORIES IN COMPANY MAGAZINES

Editor, N. A. C. A. Bulletin:

N. A. C. A. members whose employer companies publish a magazine for employees may perform a welcome service for all employees by preparing short, timely articles on individual income taxes for the magazine. Although there is a considerable amount of newspaper publicity given to taxes, it usually fails to convey the personal message which attaches to something published by the company. Then, too the newspapers publish so much about proposed tax legislation that the average individual taxpayer becomes confused and is unable to distinguish clearly between provisions which have become law and those which were merely talked about.

Our company magazine always carries an article, with illustrations, whenever a new development occurs affecting individuals. New withholding tables are always printed, and illustrations of W-2 forms were shown with a timely write-up on the use of the Withholding Receipt as a tax return.

Warning: this material must be carefully and concisely written. Don't try to include all the possible exceptions, direct the article to the problems of the average employee, and then check and double-check the script with someone else who is at least as familiar with taxes as yourself.

S. H. KIMMENS,
Hartford Chapter.

COST CURRENTS

New Official Price-Pay Policy—Executive Order 9697 signed by the President on February 14, 1946, outlines the Government's policy relative to the maintenance of a stabilized economy during the present emergency. Paragraph 2 of the order directs that the Price Administrator shall promptly provide for the adjustment of price ceilings in any case in which he finds that an industry is in a position of hardship as a consequence of an approved increase in wages or salaries. Hardship is defined to exist in those cases where the Administrator finds that the industry's current ceiling prices will leave it in an over-all loss position or in an earnings position requiring adjustment on the basis provided in this section. The order includes the following specific directives:

> The Adjustment to be provided shall be such as, in the judgment of the Price Administrator, will be sufficient, for the twelve months following the adjustment to enable the industry, unless operation at a temporary

low volume, to earn an average rate of profit equal as nearly as may be to the rate of return on net worth earned by the industry in the peacetime base period applicable to that industry, and in the case of commodities which are the subject of statutory requirements, to a rate of return sufficient to satisfy such requirements. Except to the extent necessary to reflect the abnormal costs and reduced earnings incident to temporary operation at low volume, in no case shall the Administrator provide an adjustment insufficient in amount to prevent loss operation at the time of this adjustment.

The Price Administrator shall develop standards of adjustment consistent with the purposes of this order to be applied in the case of an industry-wide action affecting an industry operating at temporary low volume.

In those cases in which the price regulations provide for the establishment or adjustment of ceiling prices on an individual-firm basis the Price Administrator shall establish such standards of adjustment as in his judgment are administratively workable and consistent with the purposes of this order.

The Stabilization Administrator shall by regulation or order establish such standards as in his judgment are administratively workable and consistent with the purpose of this order for determining the extent to which wage or salary increases in excess of the standards for approval of such increases prevailing prior to this order may be used, in the case of products or services being furnished under contract with a Federal procurement agency, as a basis for increasing costs to the United States.

Paragraph 3 of the order outlines the official policy relative to approved increases in salaries and wages which may be the basis for an adjustment of ceiling prices. The increases may be of the following types:

1. Increases made lawfully before February 14, 1946. An increase made without approval under previous postwar rules can now be used to ask for price relief.
2. Settlements recommended by the Government or a fact-finding panel before February 14, 1946.
3. Increases exempted from review as determined by the Stabilization Administrator.
4. Increases approved by Wage Stabilization Board to (a) eliminate gross inequities between related industries, plants, or job classifications, (b) correct substandards of living, or (c) correct cost-of-living lag—set at 33 per cent for the period between January, 1941, and September, 1945.
5. Increases approved by the Wage Stabilization Board consistent with the general pattern of wage or salary adjustments made in the industry or local labor market area between August 18, 1945, and February 14, 1946.

An OPA statement interpreting the above order points out that the new policy does not require that the full amount of an approved wage increase, or any part of it, must necessarily or automatically be reflected in ceiling price increases, but that price adjustments will be permitted only where the increased wage costs cannot be absorbed by increased volume or efficiency so as to leave a twelve months' profit equal to the rate of return before taxes that was earned by the industry in a normal peacetime base period.

Distribution Cost Analysis—The Bureau of Foreign and Domestic Commerce of the United States Department of Commerce has recently released bulletin number 50 of its Economic Series entitled, "Distribution Cost Analysis, A Management Tool for Cost Reduction" by Charles H. Sevin. This 56 page bulletin discusses the significance of distribution as a field for cost reduction and describes methods of analysis applicable to retail stores, wholesalers, and manufacturers. Indicative of the contents is the following list of topics discussed in the section devoted to manufacturers:

- Direct expenses
- Functional classification
- Allocation to products and customers
  - Inventory control
  - Packing and shipping
  - Transportation
  - Advertising
- Related commodity and customer cost analysis
- Allocation to units of sale
- Allocation to territories
- Unprofitable sales
  - Converting losses into profits
  - Elimination of unprofitable commodities and customers
  - Elimination of unprofitable territories
  - Substitution

The bulletin also contains an interesting series of definitions of the following cost terms:

- Direct vs. indirect
- Common vs. separable
- Fixed vs. variable
- Average vs. marginal
- Escapable vs. nonescapable
- Imputed vs. outlay
- Natural vs. functional

The bulletin is for sale and may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The price is 15 cents.

AN INVITATION TO THE

PENNSYLVANIA REGIONAL COST CONFERENCE

YORKTOWNE HOTEL, YORK, PA.

APRIL 6, 1946

PROGRAM

CONFERENCE THEME:	A Return to Cost Control	
MORNING SESSION:	*Speaker:*	C. E. Headlee Westinghouse Electric Corp. Pittsburgh, Pa.
	Subject:	"The Control of Prime Cost at Operating Department Levels"
LUNCHEON SPEAKER:	Warren Bulette, *President* Pennsylvania State Chamber of Commerce 1942-45 Former President Brandt-Warner Manufacturing Co., York, Pa.	
	Subject:	"Costs—Management's First Line of Defense"
AFTERNOON SESSION:		
FIRST PART:	*Speaker:*	Jesse G. Kline Atlantic Refining Co. Philadelphia, Pa.
	Subject:	"The Control of Direct Expenses of Operating Departments"
SECOND PART:	*Speaker:*	E. J. Hanley Allegheny Ludlum Steel Corp. Brackenridge, Pa.
	Subject:	"Revitalizing Standards for Control of General Expenses"
EVENING SESSION	**Banquet — Speaker — Entertainment**	

SPECIAL PROGRAM FOR LADIES

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